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Giant uterine leiomyoma with concurrent endometriosis managed by uterine artery embolisation followed by supravaginal hysterectomy: a case report

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Abstract

Uterine leiomyomas are the most common benign tumours of the female reproductive tract, but giant leiomyomas exceeding 20 cm in diameter or 11.3 kg in weight are rare and pose significant management challenges. We report a 42-year-old Caucasian woman with a six-year history of a progressively enlarging uterine fibroid, reaching 30 cm cranio-caudally on MRI. In keeping with her wish to preserve the uterus, uterine artery embolisation (UAE) was performed first; however, post-procedure haemoglobin fell from 119 to 88 g/L, reflecting the fibroid's necrotic, hypervascular burden. Supravaginal hysterectomy was subsequently performed without complication. Histopathology confirmed a benign leiomyoma (dominant nodule 21 x 18 x 15 cm) with concurrent grade I endometriosis. This case illustrates the diagnostic and therapeutic complexity of giant uterine leiomyomas, highlights the limitations of UAE as definitive therapy in extreme fibroid sizes, and underscores the importance of a staged, multidisciplinary management approach when uterus-preserving treatment alone proves insufficient.

Keywords uterine leiomyoma; giant fibroid; uterine artery embolisation; hysterectomy; endometriosis; case report

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1. Introduction

Uterine leiomyomas, commonly known as fibroids, are the most common benign tumours of the female reproductive tract, with a lifetime prevalence of 70-80% among women of reproductive age [1,2]. Although the majority remain asymptomatic, a substantial proportion of affected women develop clinically significant disease manifesting as abnormal uterine bleeding, pelvic pressure symptoms, and reproductive dysfunction [1,2]. The pathogenesis of uterine leiomyoma remains incompletely understood, but current evidence supports a monoclonal origin from a single transformed myometrial stem cell, with subsequent growth driven by ovarian steroid hormones, growth factors, and an evolving spectrum of genetic and epigenetic alterations including MED12 mutations and HMGA2 overexpression [2].

Management of symptomatic uterine leiomyoma ranges from expectant management and medical therapy to minimally invasive and surgical interventions, selected according to fibroid size and location, patient age, and fertility aspirations. Uterine artery embolisation (UAE) has become an established uterus-preserving alternative to surgery, achieving significant symptomatic and volumetric improvement in most patients [8,9]. However, post-embolisation syndrome and, less commonly, the need for secondary surgical intervention due to ongoing haemorrhage or extensive tissue necrosis remain recognised limitations of the technique, particularly in the setting of very large or highly vascular fibroids [8]. In cases where embolisation alone fails to control haemorrhage, or where the burden of necrotic tissue is extensive, subsequent hysterectomy may become necessary to achieve definitive treatment [6].

We report the case of a woman with a giant uterine leiomyoma and concurrent endometriosis, initially managed with UAE in an attempt to preserve the uterus, who subsequently required supravaginal hysterectomy because of post-embolisation haemorrhage and extensive haemorrhagic necrosis. This case illustrates the diagnostic and therapeutic challenges posed by giant leiomyomas, highlights the clinically relevant association between uterine leiomyoma and endometriosis, and reinforces the importance of a staged, individualised management approach informed by patient preferences and tumour characteristics.

2. Case presentation

A 42-year-old Caucasian woman, gravida 2 para 2, with no significant past medical or surgical history, presented with a six-year history of a progressively enlarging uterine fibroid associated with heavy menstrual bleeding and pelvic pressure. Written informed consent for publication of this case report and all accompanying images was obtained from the patient prior to submission. Patient data have been anonymised in accordance with institutional requirements.

Physical examination revealed a markedly enlarged uterus extending to the epigastric region, estimated at the size of a 30-week gravid uterus. Magnetic resonance imaging (MRI) of the pelvis demonstrated a giant uterine leiomyoma reaching 30 cm in cranio-caudal dimension, with areas of haemorrhagic necrosis on T2-weighted sequences. No features definitively suggestive of malignancy were identified on imaging, though the differential included degenerating fibroid versus leiomyosarcoma -- a distinction that can only be reliably made by histopathological analysis, as imaging criteria alone have demonstrated limited diagnostic accuracy for this differentiation [10].

Given the patient's strong wish to preserve her uterus, a multidisciplinary decision was made to proceed with UAE as a first-line uterus-sparing intervention. The procedure was performed by an interventional radiologist via femoral artery access; the uterine arteries were selectively catheterised and embolised with polyvinyl alcohol particles under fluoroscopic guidance, following established reporting standards [9]. The immediate post-procedural course was complicated by a significant fall in haemoglobin from 119 to 88 g/L, reflecting the substantial blood loss associated with the intervention and the fibroid's large, vascular, necrotic burden. Following multidisciplinary reassessment, supravaginal hysterectomy was recommended.

The surgery was performed under balanced intravenous anaesthesia. The intraoperative and postoperative course was uncomplicated, with no active bleeding. The excised uterus was macroscopically significantly enlarged (21 x 20.5 x 18.5 cm). The serosal surface was mostly intact with local elevation. The endometrial cavity measured 0.4 cm and myometrial thickness was 3 cm. The myometrium was deformed and the wall entirely occupied by multiple myomatous nodules; the largest nodule measured 21 x 18 x 15 cm with areas of haemorrhagic necrosis (Figure 1).

Figure 1. Excised uterine specimen demonstrating the markedly enlarged uterus with the dominant leiomyoma nodule (21 x 18 x 15 cm) and areas of haemorrhagic necrosis.

Histopathological examination demonstrated a monomorphic spindle-shaped smooth muscle cell composition with mitoses seen in small numbers, uniformly distributed; cells were separated by collagen and hyaline matrix. Areas of coagulative tumour cell necrosis, vascular invasion, and atypical mitotic figures were not observed, confirming a benign leiomyoma with degenerative changes. Ectopic endometrial glands were visualised in the outer one-third of the myometrial layer, consistent with grade I endometriosis.

Postoperatively, the patient was treated with intravenous fluids, antiemetics, anticoagulation with enoxaparin sodium 40 mg subcutaneously once daily for 14 days for thromboprophylaxis, levofloxacin hemihydrate 500 mg once daily for 7 days, and a combined topical vaginal preparation (miconazole, neomycin, metronidazole, and polymyxin B) for 6 days. She was discharged in satisfactory condition on postoperative day 5. A follow-up visit was scheduled at one month.

3. Discussion

Giant uterine leiomyomas -- conventionally defined as those exceeding 20 cm in diameter or 11.3 kg in weight -- are rare and their extreme size can produce clinical presentations mimicking aggressive abdominopelvic or ovarian malignancies, which considerably complicates both diagnosis and surgical planning [3,4,5]. These tumours may compress adjacent pelvic and abdominal viscera and are prone to haemorrhagic and necrotic degeneration, as observed in the present case [6].

Current evidence supports a monoclonal origin from a single transformed myometrial stem cell, with growth driven by oestrogen, progesterone, growth factors, and epigenetic alterations. Molecular studies demonstrate involvement of MED12 mutations, HMGA2 overexpression, and dysregulated Wnt/beta-catenin and TGF-beta signalling, which promote smooth muscle proliferation and extracellular matrix accumulation [2]. These mechanisms explain the progressive enlargement observed in our patient over six years, culminating in a tumour of exceptional size.

In an attempt to respect the patient's wish to preserve her uterus, UAE was performed first. UAE is an effective option for symptomatic fibroids; a recent prospective cohort study of 40 women demonstrated meaningful improvements in symptom severity and health-related quality of life using the validated UFS-QoL instrument [8]. However, its efficacy for giant fibroids of this magnitude is not well established, and there is a recognised risk of significant post-procedural blood loss attributable to the extensive vascular and necrotic burden of such lesions. As observed in our patient, the haemoglobin fall from 119 to 88 g/L following embolisation reflects precisely this risk. In such extreme cases, UAE may serve better as a haemostatic bridge or adjunct rather than definitive therapy, and conversion to hysterectomy is recommended when clinical response is insufficient [6,8].

A critical diagnostic concern in giant leiomyomas is the exclusion of uterine leiomyosarcoma, given the overlapping imaging appearances. A 2025 case-controlled diagnostic modelling study comparing MRI features of 42 degenerating fibroids and 46 leiomyosarcomas found that morphological criteria including lesion size, intermediate T2 signal volume, and border characteristics yielded only 70.7% sensitivity and 76.2% specificity for malignancy, concluding that imaging features alone are insufficient to obviate the need for histopathological confirmation [10]. In our patient, histopathology ultimately confirmed a benign process, underscoring the absolute necessity of tissue diagnosis in all giant fibroids where malignancy cannot be excluded on imaging.

The concurrent finding of grade I endometriosis with ectopic endometrial glands in the outer myometrium is consistent with the well-recognised hormonal overlap between these conditions. A large nationwide cohort study of over 156,000 women found that a diagnosis of uterine leiomyoma was associated with a more than six-fold increase in the hazard of subsequently developing endometriosis [7]. The combined presence of both conditions can compound symptoms such as pelvic pain and abnormal uterine bleeding, reinforcing the value of comprehensive histopathological characterisation at the time of surgery rather than macroscopic assessment alone.

Despite the complexity of giant leiomyomas, timely surgical intervention and structured postoperative management yield excellent recovery and minimise complications [6,8]. Our patient had an uneventful

postoperative course following supravaginal hysterectomy and was discharged in satisfactory condition on postoperative day 5, consistent with outcomes reported in comparable published cases.

4. Conclusion

This case illustrates the diagnostic complexity and management challenges of giant uterine leiomyoma with concurrent endometriosis. Such rare tumours can complicate both diagnosis and treatment planning, particularly when imaging findings raise concern for malignancy -- a distinction that requires histopathological confirmation. UAE remains a valuable uterus-sparing option; however, clinicians should be prepared to proceed to hysterectomy when significant post-embolisation haemorrhage or extensive tissue necrosis develops. A staged, multidisciplinary approach incorporating patient preferences, imaging, and ultimately tissue diagnosis is essential for optimal outcomes in this challenging clinical scenario.

Abbreviations

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DOI -- Digital Object Identifier
GMJ -- Georgian Medical Journal
MRI -- Magnetic resonance imaging
ORCID -- Open Researcher and Contributor ID
PHIG -- Public Health Institute of Georgia
UAE -- Uterine artery embolisation
UFS-QoL -- Uterine Fibroid Symptom and Quality of Life questionnaire

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Authors' contributions

NR: Case presentation; clinical data acquisition; Georgian-language source translation; manuscript review and editing; final approval. NAD: Content translation; introduction; conclusion; overall manuscript structure; final review and submission; final approval. MDS: Case summary; writing -- review and editing; final approval. MAS: Abstract and discussion; writing -- review and editing; final approval. All authors read and approved the final manuscript.

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Declarations

Ethics approval and consent to participate This case report was conducted in accordance with the principles of the Declaration of Helsinki. Written informed consent was obtained from the patient for participation and for publication of this case report and all accompanying images.

Consent for publication Written informed consent for publication was obtained from the patient. A copy of the consent form is available for review by the Editor-in-Chief upon request.

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